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COLLEGE OF AGRICULTURE
AGRICULTURAL EXPERIMENT STATION
BERKELEY, CALIFORNIA

CIRCULAR 338

January, 1936

SOME ECONOMIC ASPECTS OF REGULATING SHIPMENTS OF CALIFORNIA ORANGES¹

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INTRODUCTION

THE PURPOSE of this circular is to present in nontechnical form the results of an analysis of the major factors which have influenced the seasonal average f.o.b. prices of California oranges and the application of the results to the problem of estimating the effects upon returns to growers of regulating the volume of orange shipments.³

Two types of regulation will be considered: (1) limitation of the total volume marketed for the season in years of large crops relative to the buying power of the consumers; and (2) regulation of the flow of shipments to market during the season even though the total supply available for the season is not excessive.

In the analysis summer oranges and winter oranges will be considered separately. Summer oranges are those shipped during the six months May through October, which, for California, consist mainly of Valencias. Winter oranges are those shipped during the six months November through April, which, for California, consist mainly of Washington Navels. During the six months May through October, California normally contributes over 90 per cent of the United States shipments of oranges, but during the six months November through April, this state normally contributes only 50 to 55 per cent of the United States shipments of oranges.

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³ Details of the price analysis as well as a discussion of the methods employed are omitted.

SUMMER ORANGES

In figure 1, shipments of California summer oranges are represented by the solid line. It will be noted that there has been a pronounced upward trend in shipments. This upward trend is likely to continue for some years to come. Of the 135,500 acres of Valencia oranges in California in 1934, 16,700 acres, or 12 per cent, were nonbearing, while a considerable proportion of the 118,800 acres in bearing had not yet reached the age of full-bearing.

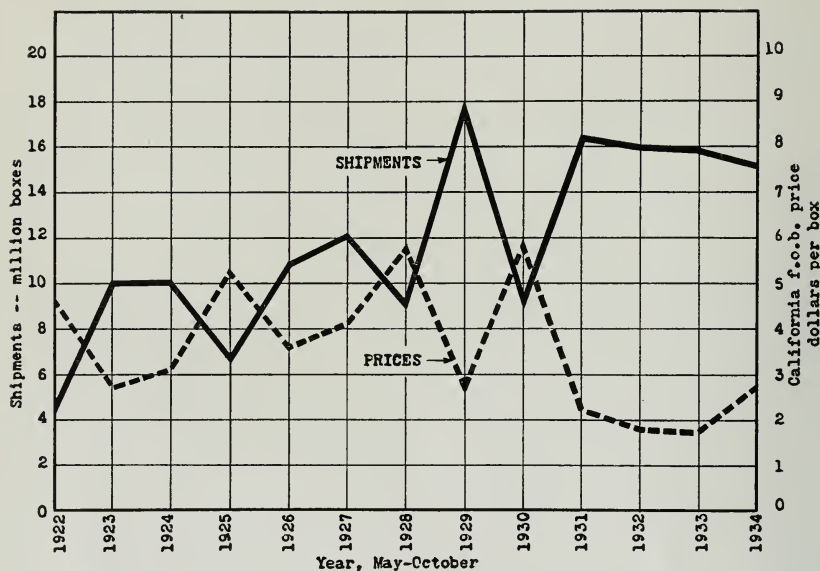


Fig. 1.—California summer oranges: shipments and seasonal average f.o.b. prices, 1922–1934.

Despite the upward trend in shipments during the first half of this period there was no downward trend in prices, which are represented by the broken line. In fact the trend of prices from 1922 to 1928 was also upward. The fact that the trend of both shipments and prices of summer oranges was upward from 1922 to 1928 is prima-facie evidence that there was an increase in demand for summer oranges during this period.

In recent years, however, the demand for summer oranges has been reduced. For example, both shipments and prices during each of the three years 1931–1933 were lower than in 1929.

Another significant fact brought out in figure 1 is that the year-to-year fluctuations in shipments have been generally accompanied by fluctuations in prices in the opposite direction; that is, a decrease in shipments from one year to another was generally accompanied by an increase in

prices, while an increase in shipments from one year to another was generally accompanied by a decrease in prices.

Factors Affecting the F.O.B. Prices of California Summer Oranges.—Variations in the seasonal average f.o.b. prices of California summer oranges are caused by numerous factors. Not all of these factors, how-

TABLE 1
SEASONAL AVERAGE F.O.B. PRICES OF CALIFORNIA SUMMER ORANGES AND
IMPORTANT FACTORS AFFECTING THEM, 1922-1934

Year, May-October	F.o.b. price	California orange shipments	Index urban consumers' income	Index com- peting-fruit production	Average num- ber of Valen- cias per box
	1	2	3	4	5
	dollars per box	thousand boxes	per cent	per cent	number per box
1922.....	4.64	4,528	79	99	—*
1923.....	2.73	10,063	94	108	—
1924.....	3.12	10,086	88	100	—
1925.....	5.26	6,669	96	100	—
1926.....	3.59	10,813	101	133	207
1927.....	4.11	12,160	102	82	227
1928.....	5.74	9,154	104	112	208
1929.....	2.69	17,735	110	91	250
1930.....	5.87	9,306	101	96	212
1931.....	2.27	16,426	85	122	240
1932.....	1.82	16,011	64	85	233
1933.....	1.78	15,884	63	83	233
1934.....	2.74	15,210	71	79	246

* Dashes indicate data not available.

Sources of data:

Col. 1: Compiled from records of the California Fruit Growers' Exchange. Prices are the weighted average prices received for oranges shipped during the six months May through October, and include prices of packed fruit and loose fruit on a packed-box basis.

Col. 2: Compiled from records of the California Fruit Growers' Exchange.

Col. 3: Unpublished index compiled by the Agricultural Industrial Relations Section of the Agricultural Adjustment Administration. 1924-1929=100.

Col. 4: Index of United States production of fresh apples, apricots, peaches, pears, plums, and cantaloupes, and United States shipments of grapefruit, shipments of oranges other than from California, and imports of bananas during the six months May to October, inclusive. 1925=100.

Col. 5: Compiled from records of the California Fruit Growers' Exchange.

ever, can be measured with the data now available. In this analysis the following were measured: (1) California shipments, (2) trend of demand, (3) buying power of consumers, (4) competing-fruit production, and (5) average sizes of Valencia oranges. While most of the variations in the seasonal average f.o.b. prices of California summer oranges from 1922 to 1934 can be accounted for by the factors measured, others have also had some influence. During the three years 1931-1933, lack of confidence on the part of the trade in the stability of orange prices was a factor of some importance.

The seasonal average f.o.b. prices of California summer oranges from 1922 to 1934 are given in table 1, column 1. The volume of shipments is the closest approximation to the supply of California summer oranges marketed and is given in column 2. In figure 2 the shipments of Cali-

ifornia summer oranges are measured along the horizontal scale, the seasonal average f.o.b. prices along the vertical scale. The diagonal curve is designed to measure the average relation that has existed between shipments and prices. It is adjusted to the situation that existed in 1929. In that year shipments amounted to 17,735,000 boxes; the average f.o.b.

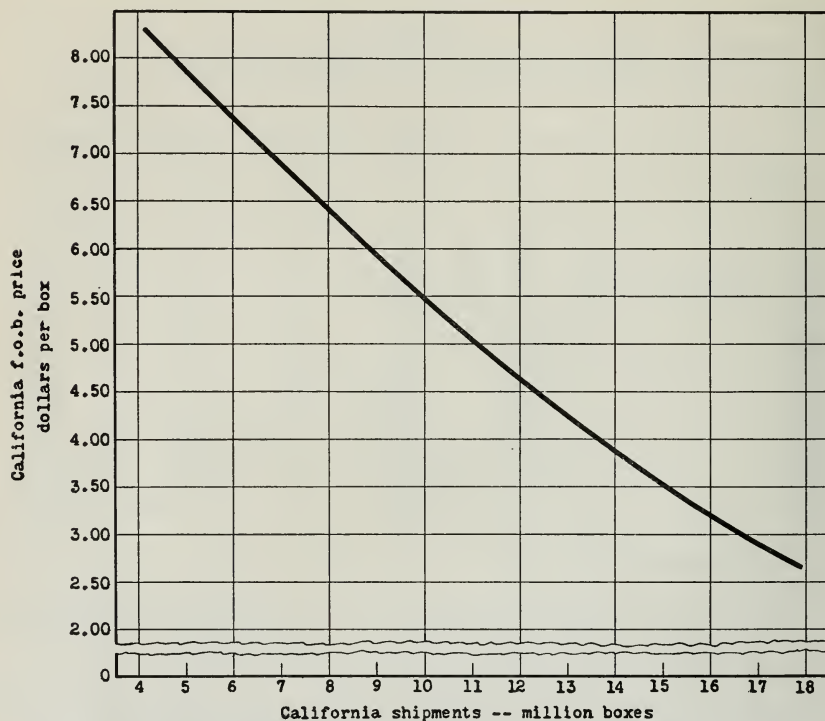


Fig. 2.—California summer oranges: estimated effect of changes in shipments upon seasonal average f.o.b. prices (adjusted to 1929 situation).

price was \$2.69 a box. This curve shows that, if shipments in 1929 had been the same as they were in 1927, when they amounted to 12,160,000 boxes, the price would have been around \$4.60 a box, but that, if they had been the same as they were in 1925, when they amounted to 6,669,000 boxes, the price would have been around \$7.00 a box.

The validity of the relation between shipments and prices indicated by the diagonal curve in figure 2 rests upon one of the fundamental laws of price. It is this: At any given time, the greater the amount of a commodity to be sold, the lower must be the price at which it is offered in order that it all may find buyers, and conversely the smaller the amount of a commodity to be sold, the higher may be the price obtained.

This law of price rests upon three separate and distinct conditions. In

the first place, a person's capacity to derive satisfaction from any one commodity is limited and his satisfaction diminishes as more and more of that commodity is consumed. In the second place, there are great differences in the incomes of consumers. And in the third place, there are considerable differences in the desires of people. These three conditions explain why at any given time a small supply of oranges brings a high price, while a large supply brings a low price. When the crop of oranges is small, it can all be sold to people who have large incomes or who desire oranges keenly. But when the crop is large, there are more oranges than these people are willing to consume, and the remainder must be sold to people with lower incomes or who desire oranges less keenly. And in order to induce this latter class to buy, it is necessary to lower the price.

There are, it is true, some people who buy the same quantity of oranges at high prices as they do at low prices, but these are consumers who are above the margin. There are always some consumers just on the margin to whom, at the ruling price, the purchase is just worth while. They will either cease buying entirely or reduce their purchases when the price goes up and will increase their purchases when the price goes down. It is the presence of these marginal buyers that causes total consumption to decrease or increase with rising or falling prices. Thus, other conditions remaining the same, a rise in the price to consumers checks purchases, a fall in the price to consumers stimulates purchases.

Thus, the diagonal curve in figure 2 illustrates the situation that exists with regard to the supply and price of summer oranges at a given time. The same situation may exist over a period of time if there is no change in demand. As has already been mentioned (p. 2), however, there was a substantial increase in demand for summer oranges prior to 1929. That is clearly shown in figure 3, in which the trend of demand is represented by the diagonal curve.⁴ The level of demand in 1929 is taken as the base and is shown on the vertical scale as zero. The trend of demand in the other years is measured from the base year. Figure 3 shows that a given quantity of summer oranges would have sold for about \$2.90 a box less in 1922 than in 1929, and for about \$0.25 a box more in 1934 than in 1929, provided the actual demand had coincided with the trend. It will be noted that from 1922 to 1928 the trend of demand rose rapidly, while from 1929 to 1934 it rose only slowly. Many factors have contributed to the upward trend in demand for summer oranges. Among the more im-

⁴ Statistically this curve shows the average relation that has existed between time and the seasonal average f.o.b. prices after simultaneously eliminating the variations in f.o.b. prices associated with variations in the volume of shipments, the index of urban consumers' incomes, the index of competing-fruit production, and the average number of oranges per box.

portant ones have been the development of new outlets, extensive advertising, and active participation of nutrition workers in advocating the wider use of oranges.

The actual demand for summer oranges has fluctuated about the trend, being sometimes above and sometimes below it. In those years when the actual demand was above the trend, f.o.b. prices were, of course, higher

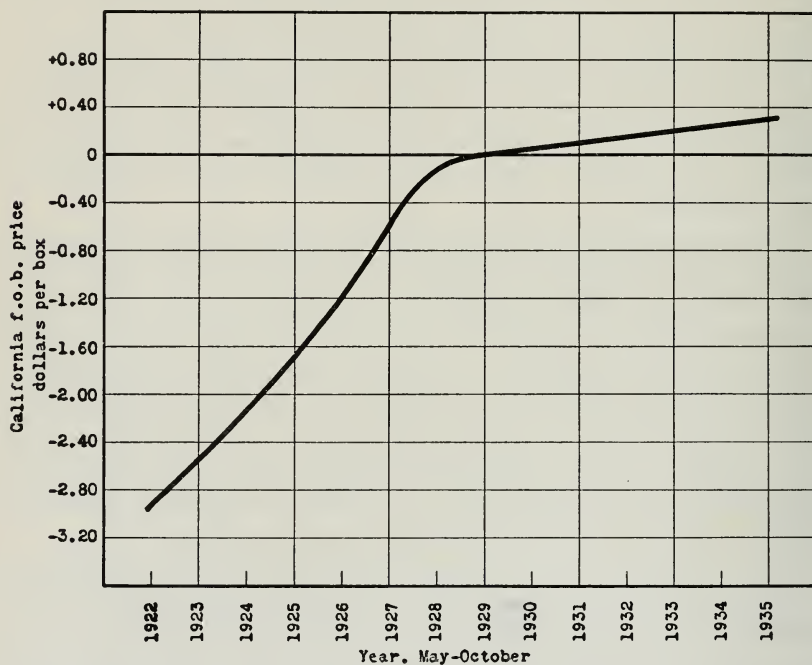


Fig. 3.—California summer oranges: estimated trend of demand (base year, 1929).

than they would have been if the actual demand had coincided with the trend, while in those years when the actual demand was below the trend, f.o.b. prices were correspondingly lower. Since 1930 the actual demand has been continuously below the trend.

In discussing the demand for oranges, misunderstanding will be avoided if a clear distinction is made between an increase in demand and an increase in consumption. The two concepts are entirely distinct, yet they are frequently confused. An increase in demand means that more of the commodity will be purchased at the same price or that the same quantity will be purchased at a higher price. The fact that the consumption of a commodity has increased is not *prima-facie* evidence that the demand has increased. An increase in consumption and a decrease in demand may occur simultaneously. For example, the consumption of summer oranges in 1931 was over seven million boxes larger

than in 1930, yet the actual demand for oranges was lower. The reason for the larger consumption, despite the lower demand, was the great reduction in prices from \$5.87 a box to \$2.27 a box. If there had been no decrease in the actual demand for oranges in 1931, prices would probably not have fallen below \$3.10.

Three of the factors affecting the price of summer oranges have been chiefly responsible for the fluctuations in the actual demand about the

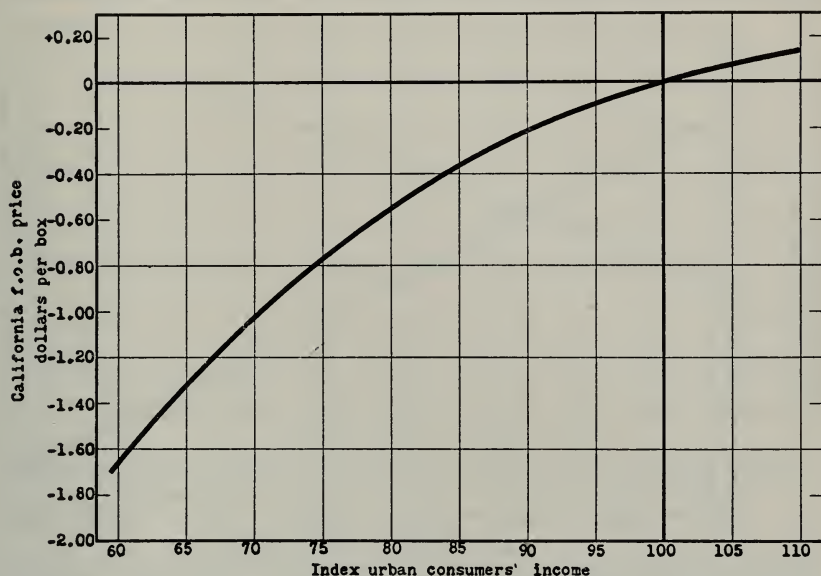


Fig. 4.—Estimated effect of changes in the index of urban consumers' incomes upon the seasonal average f.o.b. prices of California summer oranges.

trend. These are (1) changes in the buying power of consumers, (2) changes in the volume of competing fruits, and (3) changes in the quality of the oranges.

The factor most responsible for the actual demand for summer oranges being below the trend since 1930 was the low buying power of consumers. As a measure of the buying power of consumers in the United States, the index of urban consumers' income has been used. This index is given in table 1, column 3. In figure 4 the index of urban consumers' income is measured along the horizontal scale, the seasonal average f.o.b. price of summer oranges along the vertical scale. The diagonal curve shows the effect of changes in the index of urban consumers' income upon the price of oranges. As consumers' incomes increase, the same quantity of oranges can be sold at higher prices and conversely, as consumers' incomes decline, the same quantity of oranges brings lower prices, other conditions remaining the same. In 1929, when the

index of consumers' income was 110, the diagonal curve in figure 4 shows that the price of oranges was about \$0.15 a box higher than it would have been if the index had been at 100, while in 1933 when the index was at 63 the curve shows that the price of oranges was about \$1.45 a box lower than it would have been if the index had been at 100.

The second factor which has caused the actual demand for summer oranges to fluctuate from year to year is the supply of other fruits on

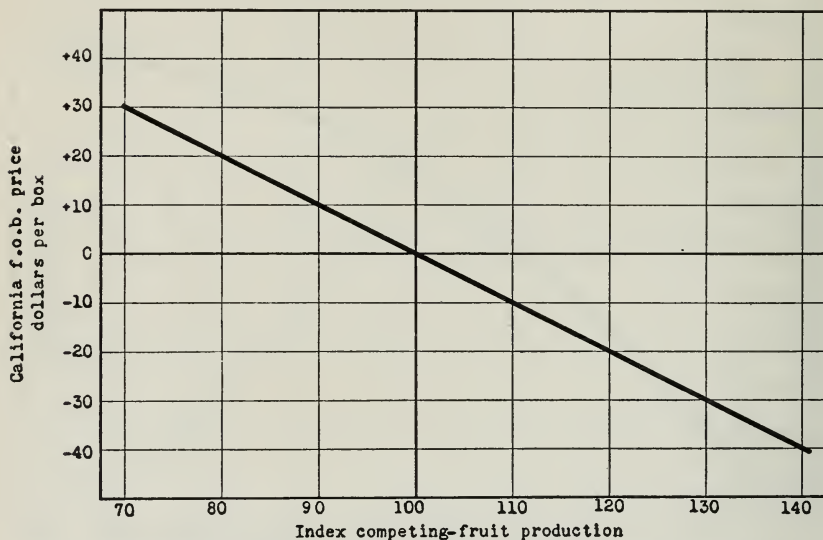


Fig. 5.—Estimated effect of changes in the index of competing-fruit production upon the seasonal average f.o.b. prices of California summer oranges.

the market. If these other fruits are available in ample supply with resulting low prices, they will offer greater competition to oranges than if their supplies are short and prices high. If cantaloupes, for example, are unusually cheap this year, the family will eat cantaloupes at breakfast more frequently and, of necessity, since there are only 365 breakfasts in a year, some other fruit, perhaps oranges, less frequently. With the information now available, it is not possible to determine exactly what products compete with summer oranges nor to measure accurately the influence of each product. For the purpose of this analysis, an index of the supply of fruits which are believed to compete more or less closely with summer oranges was constructed. This index is given in table 1, column 4.

In figure 5 the index of the supply of fruits competing with oranges is measured along the horizontal scale, the seasonal average f.o.b. price of summer oranges along the vertical scale. The diagonal line shows the

effect of changes in the volume of competing fruits upon orange prices. Thus, in 1927 when the production of competing fruit was 82 per cent of normal, the diagonal line indicates that the price of oranges that year was nearly \$0.20 a box higher than it would have been if competing-fruit production had been normal. On the other hand, in 1926 when the pro-

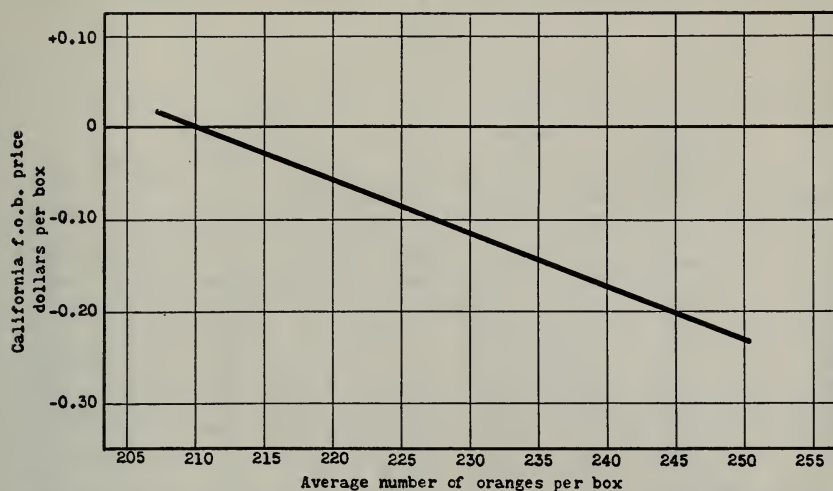


Fig. 6.—Estimated effect of changes in the average sizes of Valencia oranges upon the seasonal average f.o.b. prices of California summer oranges.

duction of competing fruits was 133 per cent of normal, the diagonal line indicates that the price of oranges that year was nearly \$0.35 a box lower than it would have been if competing-fruit production had been normal.

A third factor which has caused the actual demand for summer oranges to fluctuate from year to year has been the variations in quality. Consumers, by and large, will not pay as much for oranges of low quality as they will for those of high quality. One of the factors relating to the quality of oranges is size. The average number of Valencia oranges per box each year from 1926 to 1934 is given in table 1, column 5. In figure 6 the average number of oranges per box is measured along the horizontal scale, the seasonal average f.o.b. prices along the vertical scale. The diagonal line shows the effect of changes in the average size of oranges shipped upon f.o.b. prices received. When the crop runs heavily to small sizes the same quantity of oranges brings a lower price than when the average size of the oranges is larger. For example, in 1929 when the crop averaged 250 oranges per box, the diagonal line indicates that the f.o.b. price that year was nearly \$0.25 a box lower

than it would have been if the number of oranges had averaged around 210 per box.⁵

From the five factors—shipments, trend of demand, buying power of consumers, production of competing fruits, and average sizes of the oranges—it is possible to explain most of the variations which have occurred in the seasonal average f.o.b. prices of California summer

TABLE 2

CALIFORNIA SUMMER ORANGES: ESTIMATED AND ACTUAL F.O.B. PRICES, 1922-1934

Year, May-October	Prices estimated from shipments only	Adjustments in prices for				Prices explained by five factors	Actual prices	Col. 6 minus col. 7
		Trend of demand	Consumers' income	Fruit pro- duction	Average sizes			
	1	2	3	4	5	6	7	8
	<i>dollars per box</i>	<i>dollars per box</i>	<i>dollars per box</i>	<i>dollars per box</i>	<i>dollars per box</i>	<i>dollars per box</i>	<i>dollars per box</i>	<i>dollars per box</i>
1922.....	8.12	-2.90	-0.59	+0.01	—*	4.64	4.64	—
1923.....	5.47	-2.52	-0.12	-0.08	—	2.75	2.73	-0.02
1924.....	5.47	-2.12	-0.27	0.00	—	3.08	3.12	+0.04
1925.....	7.04	-1.68	-0.08	0.00	—	5.28	5.26	-0.02
1926.....	5.12	-1.20	+0.02	-0.33	+0.02	3.63	3.59	-0.04
1927.....	4.58	-0.60	+0.04	+0.18	-0.10	4.10	4.11	+0.01
1928.....	5.88	-0.13	+0.06	-0.12	+0.01	5.70	5.74	+0.04
1929.....	2.69	0.00	+0.14	+0.09	-0.23	2.69	2.69	—
1930.....	5.80	+0.05	+0.02	+0.04	-0.01	5.90	5.87	-0.03
1931.....	3.06	+0.10	-0.37	-0.22	-0.18	2.39	2.27	-0.12
1932.....	3.19	+0.15	-1.38	+0.15	-0.13	1.98	1.82	-0.16
1933.....	3.23	+0.20	-1.46	+0.17	-0.13	2.01	1.78	-0.23
1934.....	3.44	+0.25	-0.97	+0.21	-0.21	2.72	2.74	+0.02

* Dashes indicate data not available.

Sources of data:

Col. 1: From figure 2.

Col. 2: From figure 3.

Col. 3: From figure 4.

Col. 4: From figure 5.

Col. 5: From figure 6.

Col. 6: Figures in col. 1 plus or minus corresponding figures in cols. 2 to 5 inclusive.

Col. 7: From table 1, col. 1.

oranges. This is shown in detail in table 2. For example, in 1934 shipments amounted to 15,210,000 boxes. If shipments in 1929 had amounted to only 15,210,000 boxes, the price would have been around \$3.44 a box (fig. 2). Figure 3 shows, however, that the trend of demand for oranges in 1934 was \$0.25 a box higher than in 1929, so \$0.25 must be added to \$3.44. The index of consumers' income in 1934 was 71, and figure 4 shows that the price was \$0.97 a box less than if the index had been 100, so \$0.97 must be subtracted. The index of competing-fruit production in 1934 was 79, and according to figure 5 the price of oranges was \$0.21 a box higher than it would have been if the index of competing-fruit production had been 100, so \$0.21 must be added. The average number

⁵ An increase in the sizes of oranges from an average of about 200 per box would probably not result in higher prices than would prevail for the same volume averaging between 200 and 210 oranges per box. On the other hand, a decrease in the sizes of oranges from 250 per box would probably result in still lower prices.

of oranges per box in 1934 was 246, and figure 6 shows that \$0.21 must be subtracted. The price explained by the factors mentioned, therefore, is \$2.72 a box. The actual price in 1934 was \$2.74 a box or \$0.02 a box higher than the price explained by the factors mentioned.

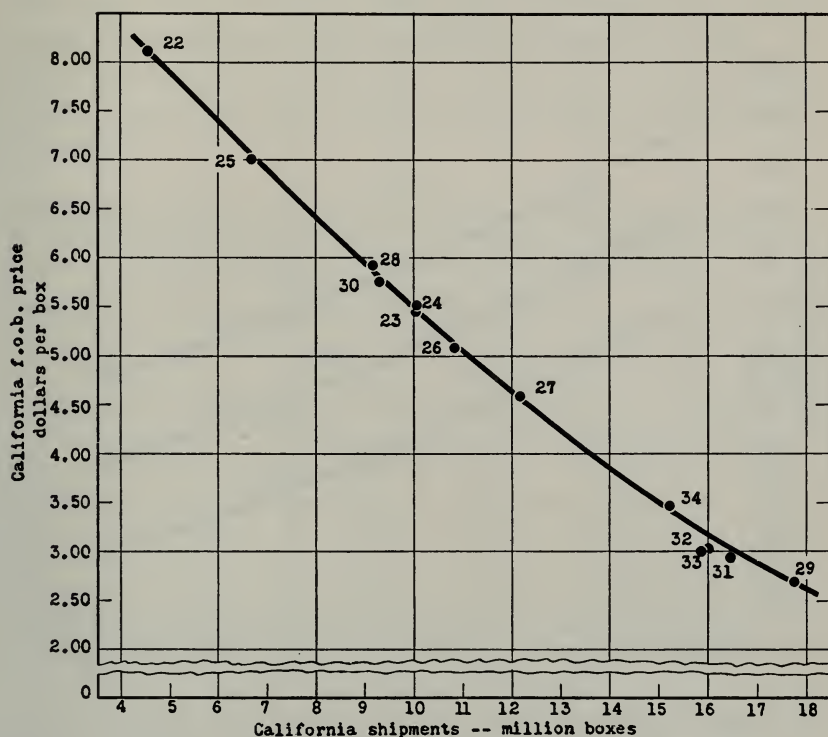


Fig. 7.—California summer oranges: relation between shipments and seasonal average f.o.b. prices after simultaneously eliminating the trend of demand and variations in f.o.b. prices associated with variations in the index of urban consumers' incomes, in the index of competing-fruit production, and in the average number of oranges per box.

Table 2, column 6, shows the estimated prices for the other years, the estimates being obtained in the same way as for 1934. Column 7 shows the actual prices, and column 8 shows the differences between the estimated and the actual prices. The factors measured account for nearly all of the variations which have occurred in these seasonal average f.o.b. prices of summer oranges during the thirteen years 1922–1934. The greatest differences between the actual and the estimated prices are in 1931, 1932, and 1933. The reason for these differences will be discussed later (p. 17).

Although nearly all of the variation that occurred in the seasonal average f.o.b. prices of California oranges from 1922 to 1934 can be

accounted for by the five factors measured, it does not necessarily follow that they are the only ones that affected prices. Other factors such as condition of the oranges, confidence of the trade in the stability of the market, and export demand are also important. It appears, however, that with the exceptions of 1931, 1932, and 1933, factors other than

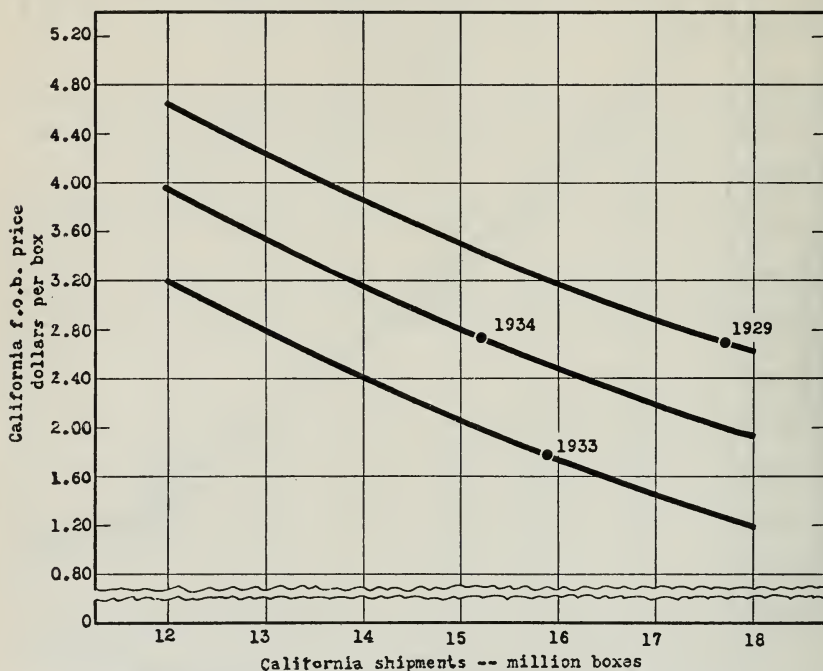


Fig. 8.—California summer oranges: supply-price curve adjusted to various demand situations.

those measured either did not vary much,⁶ or if they did vary they were correlated with one or more of the five factors measured.

Effect Upon Returns to Growers of Limiting the Volume of Summer-Orange Shipments.—In arriving at an approximation of the net effect of changes in the volume of summer-orange shipments upon f.o.b. prices and returns to growers, it is necessary to eliminate the influence of the major factors, except shipments, which have affected prices. In figure 7, each dot represents, for the year indicated, the shipments and seasonal average f.o.b. prices of California summer oranges after simultaneously eliminating the trend of demand and the variations in f.o.b. prices associated with the variations in the index of urban consumers'

⁶ Since correlation merely measures the extent to which changes in one factor are associated with changes in another, the importance of a factor cannot be determined if there has been no change in its position during the period under consideration.

income, the index of competing-fruit production, and the average number of oranges per box. The diagonal curve⁷ either passes through or very close to all of the dots, with the exception of 1931, 1932, and 1933. This curve may be designated the "supply-price curve" for California summer oranges. Its slope indicates the approximate effect of changes in the volume of shipments upon the seasonal average f.o.b. prices. Its position may be adjusted upward and to the right or downward and to the left in order to coincide with the demand situation prevailing in a given season.

TABLE 3

CALIFORNIA SUMMER ORANGES: ESTIMATED EFFECT OF SHIPPING AN ENTIRE CROP OF VARIOUS SIZES UPON F.O.B. PRICES, TOTAL VALUE TO GROWERS, AND AVERAGE RETURNS PER ACRE, UNDER DEMAND CONDITIONS SIMILAR TO THOSE OF 1934

Shipments	F.o.b. price	F.o.b. price minus 74 cents*	Value on trees	Average returns per acre†
1	2	3	4	5
<i>thousand boxes</i>	<i>dollars per box</i>	<i>dollars per box</i>	<i>thousand dollars</i>	<i>dollars</i>
13,000.....	3.54	2.80	36,400	306
14,000.....	3.16	2.42	33,880	285
15,000.....	2.81	2.07	31,050	261
15,210.....	2.74	2.00	30,420	256
16,000.....	2.49	1.75	28,000	236
17,000.....	2.19	1.45	24,650	207
18,000.....	1.99	1.25	22,500	189

* The average cost of picking, hauling, packing, and selling amounted to \$0.74 a packed box in 1934.

† The bearing acreage of Valencia oranges in 1934 amounted to 118,800 acres.

In figure 8 the supply-price curve for California summer oranges has been adjusted to three different positions, namely, 1929, 1933, and 1934.⁸ The middle curve, representing the 1934 situation, shows that the actual demand for oranges in that year was materially less than in 1929 but materially greater than in 1933. In 1934 shipments amounted to 15,210,000 boxes; the average f.o.b. price was \$2.74 a box. This middle curve shows that, if shipments in 1934 had amounted to 13,000,000 boxes, the average price would have been around \$3.55 a box, while, if shipments had amounted to 17,000,000 boxes, the average price would have been around \$2.20 a box, with, of course, the assumption that there were no changes in the other factors which affect orange prices.

Table 3 is designed to show the relation between the size of the California summer-orange crop and returns to growers under the demand conditions which prevailed in 1934, if the entire crop is assumed to

⁷ The curve in figure 7 is identical with the curve in figure 2.

⁸ Only the lower part of the curve in figure 7 is shown in figure 8. The three curves in figure 8 were drawn so as to be parallel on an arithmetic scale.

have been shipped. Column 2 shows the probable prices of summer oranges which would have prevailed in 1934 if shipments had been the same as those given in column 1, and are derived from the middle curve in figure 8. With a cost at 74 cents a packed box for picking, hauling, packing, and selling, column 3 shows the equivalent price per packed box on the trees. Column 4 shows the probable total returns to the growers for the fruit on the trees, and column 5 shows the probable average returns per acre on the trees. The average return per acre for summer

TABLE 4

CALIFORNIA SUMMER ORANGES, 1934: ESTIMATED EFFECT OF LIMITING SHIPMENTS
UPON F.O.B. PRICES, TOTAL VALUE OF THE CROP, AND
AVERAGE RETURNS PER ACRE

Shipments	F.o.b. price	F.o.b. price minus 60 cents*	Value at receiving door	Cost of picking and hauling at 14 cents	Value on trees	Average returns per acre†
1	2	3	4	5	6	7
<i>thousand boxes</i>	<i>dollars per box</i>	<i>dollars per box</i>	<i>thousand dollars</i>	<i>thousand dollars</i>	<i>thousand dollars</i>	<i>dollars</i>
15,210.....	2.74	2.14	32,549	2,129	30,420	256
15,000.....	2.81	2.21	33,150	2,129	31,021	261
14,000.....	3.16	2.56	35,840	2,129	33,711	284
13,000.....	3.54	2.94	38,220	2,129	36,091	304

* The average cost of packing and selling in 1934 amounted to \$0.60 a packed box.

† The bearing acreage of Valencia oranges in 1934 amounted to 118,800 acres.

oranges in 1934 was \$256. If the 1934 crop had been short and shipments had amounted to only 13,000,000 boxes, average returns per acre would have been over \$300, whereas if the crop had been large and shipments had amounted to 18,000,000 boxes, average returns per acre would have been less than \$200.

Table 4 is designated to show the effect upon returns to growers of limiting shipments through the withholding of oranges from the market. Column 2 shows the probable prices of summer oranges that would have prevailed in 1934 if shipments had been limited to those given in column 1. With the cost of packing and selling at 60 cents a packed box, column 3 shows the price per packed box at the receiving door of the packing-house. Column 4 shows the value of the total shipments at the receiving door. With an average cost for picking and hauling of 14 cents per packed box, column 5 shows the total cost of picking and hauling 15,210,000 boxes. Since the entire crop must be picked and hauled if total shipments are curtailed, the total cost of picking and hauling remains the same, irrespective of the volume sent to the products plant or dumped. Column 6 shows the probable total returns to the growers for fruit on the trees, and column 7 shows the probable average returns

per acre on the trees. As already stated, the average returns per acre for summer oranges in 1934 were \$256. If shipments had been limited to 14,000,000 boxes, the average returns would have been increased in the neighborhood of \$30 an acre. These figures are based upon the assumption that the entire industry would have participated in the limitation.

The extent to which limitation of California summer-orange shipments would result in an increase in returns to growers depends to a considerable extent upon the size of the crop and upon the demand con-

TABLE 5

CALIFORNIA SUMMER ORANGES: ESTIMATED EFFECT OF A REDUCTION IN SHIPMENTS UPON TOTAL VALUE OF THE CROP AT THE RECEIVING DOOR OF THE PACKING PLANT UNDER VARIOUS DEMAND SITUATIONS

Shipments	Estimated value of crop with demand situation similar to		
	1929	1933	1934
1	2	3	4
<i>thousand boxes</i>	<i>thousand dollars</i>	<i>thousand dollars</i>	<i>thousand dollars</i>
15,000.....	43,650	21,900	33,150
14,000.....	45,640	25,340	35,840
13,000.....	47,320	28,470	38,220
Effect of reduction from 15 to 13 million boxes..	+3,670	+6,570	+5,070

ditions prevailing at the time. Table 5 shows the estimated effect of a reduction in shipments of California summer oranges upon the total value of the crop at the receiving door of the packing-house under three different demand situations; namely, 1929 when the index of consumers' income was 110, 1933 when the index was 63, and 1934 when the index was 71. It will be noted that the greatest gain from limitation of shipments occurs in a year of lowest consumer demand and the smallest gain in a year of highest consumer demand. A reduction in shipments from 15,000,000 boxes to 13,000,000 boxes would have resulted in an increase in gross returns of about 8 per cent in 1929, about 15 per cent in 1934, and about 30 per cent in 1933.

In summarizing this part of the analysis, the following conclusions may be stated: (1) That in years of large crops limitation of shipments of California summer oranges during the season as a whole would result in increased prices and returns to growers, and (2) that limitation of shipments is more effective in increasing returns to growers in years of low consumers' buying power than in years of high consumers' buying power.

Effect Upon Returns to Growers of Regulating the Flow of Summer-

Orange Shipments During the Season.—During the decade 1920–1930 conditions in the California summer-orange industry were such that the large marketing organizations, through adjustments in their shipments, were able to maintain an effective regulation of the total movement from the state, which prevented extensive market gluts with their accompanying price cutting. During that period the demand for summer oranges increased even faster than the supply, with the result that the trend of prices was upward. With the pronounced decrease in the buying power of consumers for the past few years and in face of large crops, the large marketing organizations acting independently were unable to keep the total movement from the state nicely adjusted to the market demands. Under these conditions prices in eastern markets at times fell below the cost of transferring the oranges from the trees to these markets with resultant “red ink” returns to growers, and wholesalers and retailers found the handling of oranges to be a hazardous business. The net effect of this situation was a reduction in prices and returns to growers.

In order to avoid the disastrous effects of glutted markets upon returns to growers, shippers handling approximately 90 per cent of the Valencia orange crop entered into an agreement in the summer of 1932. This agreement was designed to regulate the flow of Valencia orange shipments from the state in accordance with the market demands. After about four weeks’ operation the program was abandoned because one marketing organization withdrew from the agreement, and the remaining organizations felt that, with only about 80 per cent of the crop under the program, they were placed in too disadvantageous a position to continue regulation of shipments by themselves. Shortly after the beginning of the 1933 Valencia season, a new agreement was developed under which a program for regulating the flow of shipments to market was carried on until the close of that season. The consensus of opinion among the marketing organizations was that the regulation of shipments under the programs in 1932 and 1933 contributed to the stabilization of the market for Valencia oranges during the period of regulation and resulted in larger returns to growers than would otherwise have prevailed.

While judgment regarding the effect of regulation of the flow of orange shipments during the season upon returns to growers must rest largely upon qualitative rather than quantitative analysis, the analysis of f.o.b. prices of summer oranges presented in the previous section affords some indication that the voluntary programs in 1932 and 1933 were not so effective as the programs in 1934 and 1935 under the Marketing Agreement for Shippers of Oranges and Grapefruit Produced in

California and Arizona. Figure 7 shows that the adjusted f.o.b. prices in 1932 and 1933 are below the supply-price curve, whereas the adjusted f.o.b. price in 1934 is slightly above it.⁹ The analysis of preliminary data for 1935 indicates that the adjusted f.o.b. price in 1935 is substantially above the supply-price curve.¹⁰ In both 1934 and 1935 virtually all shippers participated in a coördinated program of regulation of orange shipments, whereas in 1932 and 1933 shippers handling some 10 per cent of the total volume remained outside the program. In some weeks these nonparticipating organizations shipped as much as 20 per cent of the total shipments of that particular week. Thus, a few shippers partially nullified the actions of the larger group. Probably also, in view of the abandonment of the 1932 program after a month's operation, the trade was not fully confident in 1933 that shipment regulation would be continued throughout the season.¹¹

It is generally accepted by marketing organizations that a larger quantity of fruits and vegetables can be moved into consumption at a higher price to growers on a stabilized market than on a demoralized one. Experiences with several commodities have demonstrated this general tendency and various students have explained the underlying principle.¹²

In discussing the relation between changes in price and consumption of oranges, it was pointed out (p. 5) that a reduction in price to consumers generally results in an increase in consumption, while an increase in the price to consumers generally results in a decrease in consumption. There is also a definite relation between changes in prices and purchases by the trade, but the direction of the movement is opposite to that of consumers, and the response of dealers is to expected prices, while the response of consumers is to present prices. In fact there are two laws of supply and demand, a consumers' law and a dealers' law. A reduction in the price to consumers generally results in an immediate increase in sales, but a reduction in the price to the trade, if a further drop is anticipated, generally results in a decrease rather than an increase in sales.

⁹ The f.o.b. prices in figure 7 have been adjusted by eliminating the trend of demand and the variations in f.o.b. prices associated with the variations in the index of urban consumers' income, the index of competing-fruit production, and the average number of oranges per box.

¹⁰ In addition to the regulation of the flow of shipments, two other factors, namely a favorable export market and increased expenditure for advertising by the California Fruit Growers' Exchange, contributed to a higher actual f.o.b. price in 1935 than that explained by the five factors measured.

¹¹ Factors other than regulation of shipments may be contributed to the differences between the adjusted prices in relation to the supply-price curve (fig. 7).

¹² Taussig, F. W. Is market price determinate? *The Quarterly Journal of Economics* 35(3):394-411. 1921.

Commons, John R. *Institutional economics*. p. 555-58. The Macmillan Co., New York. 1934.

The sequence of relation between unregulated shipments, prices, and volume is about as follows: Unregulated shipments lead to excessive supplies in wholesale markets; excessive supplies lead to price cutting and a weak market; falling prices lead to reduced purchases by the trade and loss of interest in featuring the product. Some time elapses before the lower prices are passed on to consumers and, consequently, a prompt increase in consumption fails to materialize. Thus, the immediate effects of allowing the market to become congested are lower prices to growers without a corresponding drop in prices to consumers, reduced movement into trade channels, and loss of interest on the part of dealers in handling and promoting the product. It may take weeks to regain the former interest of the dealers, and during that time the market outlet is restricted.

As contrasted with gluts and falling prices, regulated supplies and stable prices facilitate the flow of oranges through the trade channels into consumption. Dealers are not much concerned whether wholesale prices of oranges in eastern markets are \$3.50 a box or \$2.50 a box, yet this difference of \$1.00 a box means the difference between solvency and bankruptcy to many growers. The dealers' primary concern is in price stability. If they have reasonable assurance that their competitors will not be able to buy more cheaply tomorrow than they can today, they are active buyers and therefore aggressive sellers. But if the prospect of returns from handling oranges is uncertain, jobbers and retailers turn their attention to other products. It must be remembered that there are a large number of fruits from which dealers may choose those they desire to handle.

WINTER ORANGES

United States shipments of oranges during the six months November through April for the years 1922-23 through 1934-35 are shown by the vertical bars in figure 9. The crosshatched portion of the bars represents California shipments, the open portion shipments from other states, principally Florida. The solid line represents the seasonal average f.o.b. prices of California winter oranges. During the thirteen years shown in figure 9 the trend of total shipments was upward. Between 1922-23 and 1928-29 shipments from both California and Florida were increasing. Since 1928-29, however, no further upward trend in California shipments has occurred. On the other hand, the trend of shipments from Florida has continued upward.

From 1924-25 to 1929-30, f.o.b. prices of California winter oranges were maintained at a relatively high level. Since 1929-30, however, f.o.b. prices have been greatly reduced. Average prices during the five years

1930-31 to 1934-35 were less than one-half as high as the average of the previous five years.

Factors Affecting the F.O.B. Prices of California Winter Oranges.—In the analysis of variations in the seasonal average f.o.b. prices of California winter oranges three factors were measured: (1) United States shipments of oranges during the six months November through April;

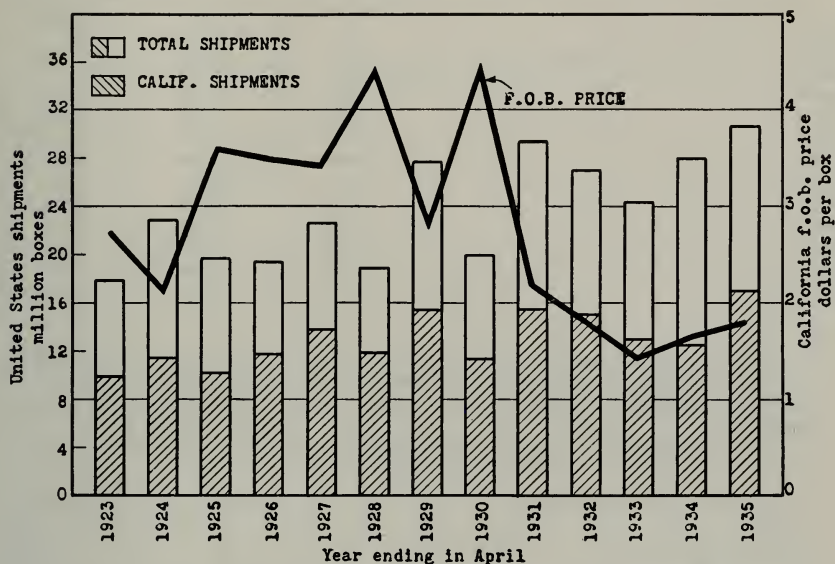


Fig. 9.—United States shipments of winter oranges and seasonal average f.o.b. prices of California winter oranges, 1922-23 to 1934-35.

(2) trend of demand; and (3) buying power of consumers. With certain exceptions, which will be referred to later (p. 23), these three factors account for most of the variations in the seasonal average f.o.b. prices of California winter oranges during the past thirteen years. Among the factors other than those measured which exert considerable influence are competition of other fruits, particularly grapefruit,¹³ the quality of the oranges,¹⁴ the percentage of the total winter-orange supply contributed by this state, and the confidence of the trade in the stability of the market.

The seasonal average f.o.b. prices of California winter oranges from

¹³ As yet the author has been unable to construct a satisfactory index of the production of fruits competing with winter oranges. It is his belief, based upon general observation and discussion with experienced managers of marketing organizations, that grapefruit competes more keenly with oranges than does any other product.

¹⁴ Variations in the average sizes of California winter oranges from year to year apparently exert little influence upon the seasonal average f.o.b. price. The variation is not so great as in the case of summer oranges and the average size is not so small.

TABLE 6

SEASONAL AVERAGE F.O.B. PRICES OF CALIFORNIA WINTER ORANGES AND IMPORTANT FACTORS AFFECTING THEM, 1922-23 TO 1934-35

Year, November-April	California f.o.b. price	United States orange shipments	Index urban consumers' income
	1	2	3
	<i>dollars per box</i>	<i>thousand boxes</i>	<i>per cent</i>
1922-23.....	2.71	17,966	88
1923-24.....	2.12	22,969	92
1924-25.....	3.60	19,845	92
1925-26.....	3.50	19,586	101
1926-27.....	3.45	22,715	102
1927-28.....	4.39	18,983	101
1928-29.....	2.80	27,961	106
1929-30.....	4.45	20,057	106
1930-31.....	2.17	29,513	92
1931-32.....	1.80	27,052	75
1932-33.....	1.43	24,417	61
1933-34.....	1.65	28,080	70
1934-35.....	1.80	30,663	73

Sources of data:

Col. 1: Compiled from records of the California Fruit Growers' Exchange. Prices are those received for fruit shipped during the six months November through April, and include prices of packed fruit and loose fruit on a packed-box basis.

Col. 2: Compiled from records of the California Fruit Growers' Exchange, and from Crops and Markets.

Col. 3: Unpublished index compiled by the Agricultural Industrial Relations Section of the Agricultural Adjustment Administration. Average 1924-1929 = 100.

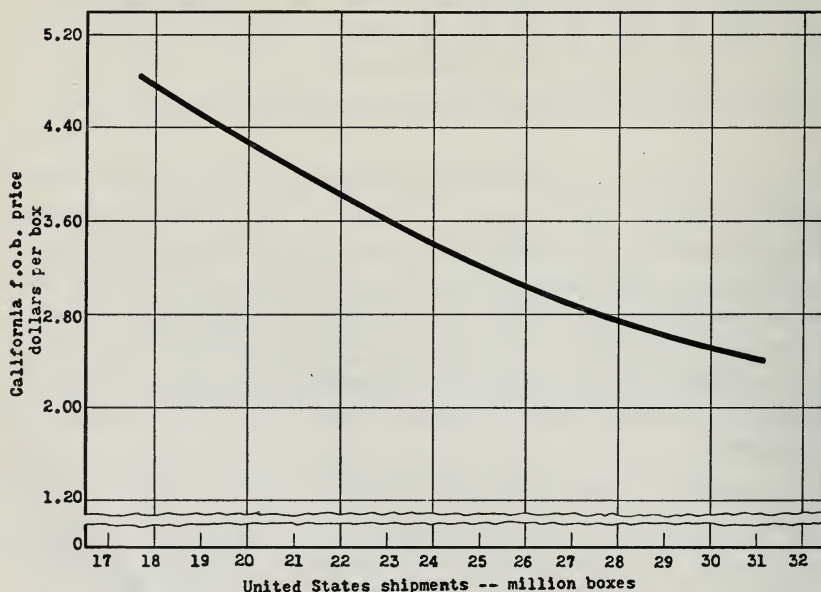


Fig. 10.—Winter oranges: estimated effect of changes in United States shipments upon California seasonal average f.o.b. prices (adjusted to approximate 1928-29 situation).

1922-23 to 1934-35 are given in table 6, column 1. United States shipments of winter oranges for the same years are given in column 2. In figure 10, United States shipments of winter oranges are measured along the horizontal scale, the seasonal average f.o.b. prices of California winter oranges along the vertical scale. The diagonal curve is designed to measure the average relation that has existed between United States

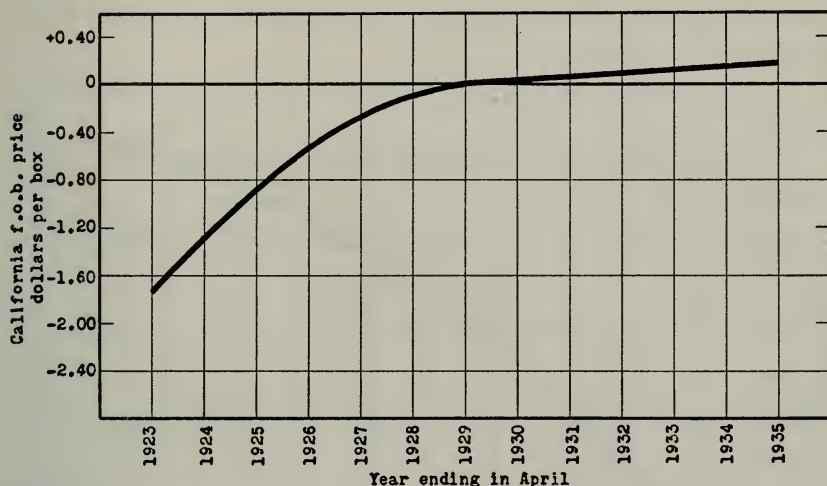


Fig. 11.—Winter oranges: estimated trend of demand (base year, 1928-29).

shipments and California prices. It is adjusted to the approximate situation that existed in 1928-29. In that season United States shipments amounted to 27,961,000 boxes, the price of California winter oranges was about \$2.75 a box. The curve shows that, if shipments in 1928-29 had been as large as they were in 1934-35, when they amounted to 30,663,000 boxes, the price would have been around \$2.45 a box, while if they had been as small as they were in 1926-27 when they amounted to 22,715,000 boxes, the price would have been around \$3.65 a box. This curve then represents the relation that exists between United States shipments and California f.o.b. prices of winter oranges at a given time. Over a period of time the position of the curve changes with changes in demand conditions.

The trend of demand for California winter oranges from 1922-23 to 1934-35 is shown by the diagonal curve in figure 11.¹⁵ The level of demand in 1928-29 is taken as the base and is shown on the vertical scale as zero. The trend of demand in other years is measured from the base

¹⁵ Statistically this curve shows the average relation that has existed between time and the seasonal average f.o.b. prices after simultaneously eliminating the variations in f.o.b. prices associated with variations in the volume of shipments and in the index of urban consumers' incomes.

year. As in the case of summer oranges (see fig. 3), two distinct movements are noticeable, a rapid rise during the first half of the period and a slow rise during the latter half. During neither period, however, was the rise as great as for summer oranges. The actual demand for winter oranges has fluctuated about the trend, being sometimes above and sometimes below it. The chief factor responsible for the year-to-year fluctuations in the actual demand for winter oranges has been the change in the buying power of consumers.

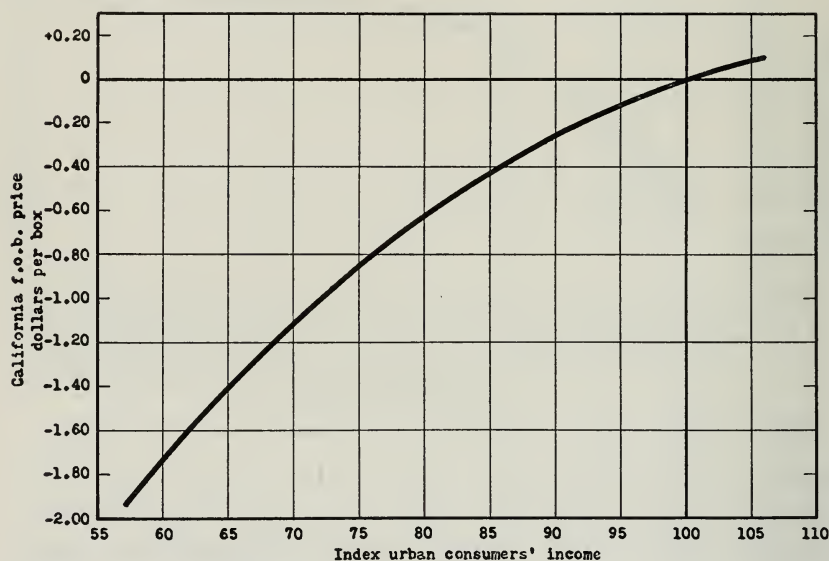


Fig. 12.—Estimated effect of changes in the index of urban consumers' incomes upon the seasonal average f.o.b. prices of California winter oranges.

The effect of changes in the buying power of consumers upon the prices of California winter oranges is shown in figure 12. The index of urban consumers' income (see table 6, col. 3) is measured along the horizontal scale, the seasonal average f.o.b. prices of California winter oranges along the vertical scale. The diagonal curve shows the effect of changes in the index of consumers' income upon the price of oranges. For example, in 1928–29, when the index was at 106, the curve indicates that the price of oranges that year was about \$0.10 a box higher than it would have been if the index had been at 100, while in 1932–33, when the index was at 61, the curve shows that the price of oranges that year was nearly \$1.70 a box lower than it would have been if the index had been at 100.

Table 7, column 4, shows the prices estimated from the three factors measured, namely: (1) United States shipments, (2) trend of demand,

and (3) index of urban consumers' income. Column 5 shows the actual prices, and column 6 shows the difference between the estimated and actual prices. The greatest differences are in 1924-25, 1925-26, 1930-31, 1931-32, and 1932-33.

Effect Upon Returns to Growers of Limiting Winter-Orange Shipments.—In arriving at an approximation of the net effect of changes in

TABLE 7

CALIFORNIA WINTER ORANGES: ESTIMATED AND ACTUAL F.O.B. PRICES,
1922-23 TO 1934-35

Year, November-April	Prices estimated from United States shipments only	Adjustments in prices for		Prices explained by three factors	Actual prices	Col. 4 minus col. 5
		Trend of demand	Consumers' income			
	1	2	3	4	5	6
	dollars per box	dollars per box	dollars per box	dollars per box	dollars per box	dollars per box
1922-23.....	4.75	-1.73	-0.32	2.70	2.71	+0.01
1923-24.....	3.61	-1.30	-0.20	2.11	2.12	+0.01
1924-25.....	4.31	-0.89	-0.20	3.22	3.60	+0.38
1925-26.....	4.37	-0.53	+0.02	3.86	3.50	-0.36
1926-27.....	3.66	-0.26	+0.04	3.44	3.45	+0.01
1927-28.....	4.51	-0.08	+0.02	4.45	4.39	-0.06
1928-29.....	2.74	0.00	+0.10	2.84	2.80	-0.04
1929-30.....	4.27	+0.03	+0.10	4.40	4.45	+0.05
1930-31.....	2.56	+0.06	-0.20	2.42	2.17	-0.25
1931-32.....	2.87	+0.09	-0.86	2.10	1.80	-0.30
1932-33.....	3.32	+0.12	-1.67	1.77	1.43	-0.34
1933-34.....	2.73	+0.15	-1.11	1.77	1.65	-0.12
1934-35.....	2.45	+0.18	-0.95	1.68	1.80	+0.12

Sources of data:

Col. 1: From figure 10.
Col. 2: From figure 11.
Col. 3: From figure 12.

Col. 4: Figures in col. 1 plus or minus corresponding figures
in cols. 2 and 3.
Col. 5: From table 6, col. 1.

the volume of winter-orange shipments upon prices and returns to growers, the same procedure is adopted as was followed in the case of summer oranges. (See p. 12.) In figure 13 each dot represents, for the season ending in April of the year indicated, the United States winter-orange shipments and seasonal average f.o.b. prices of California winter oranges, after simultaneously eliminating the trend of demand and the variations in f.o.b. prices associated with the variations in the index of urban consumers' income. The slope of the diagonal curve¹⁰ indicates the approximate effect of changes in the volume of United States winter-orange shipments upon the seasonal average f.o.b. prices of California winter oranges. This curve may be designated the "supply-price curve" for winter oranges. Its position may be adjusted upward and to the right

¹⁰ The curve in figure 13 is identical with the curve in figure 10.

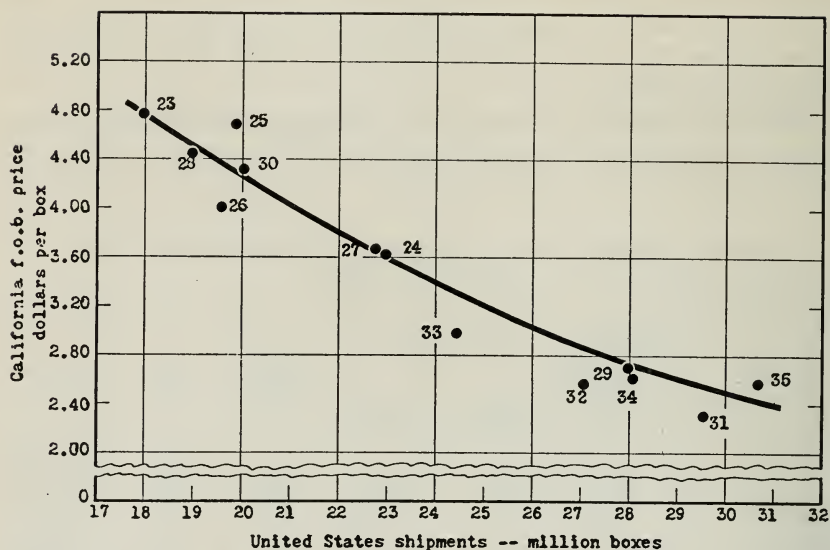


Fig. 13.—Winter oranges: relation between United States shipments and California seasonal average f.o.b. prices after simultaneously eliminating the trend of demand and variations in f.o.b. prices associated with the variations in the index of urban consumers' incomes.

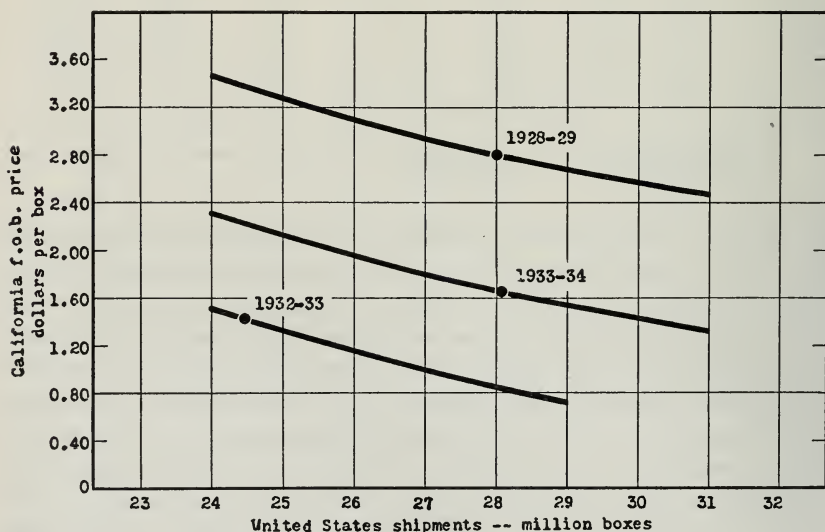


Fig. 14.—Winter oranges: supply-price curve adjusted to various demand situations.

or downward and to the left in order to coincide with the demand situation prevailing in a given season.

In figure 14 the supply-price curve for winter oranges has been adjusted to three different positions, namely, 1928-29, 1932-33, and 1933-34.¹⁷ The middle curve, representing the 1933-34 situation, shows that the demand for winter oranges in that year was materially less than in 1928-29 but materially greater than in 1932-33. In 1933-34

TABLE 8

WINTER ORANGES, 1933-34: ESTIMATED EFFECT OF LIMITING UNITED STATES SHIPMENTS UPON CALIFORNIA F.O.B. PRICES, TOTAL VALUE OF THE CROP, AND AVERAGE RETURNS PER ACRE, WITH THE SAME PERCENTAGE REDUCTION IN ALL STATES

Shipments			California f.o.b. price	F.o.b. price minus 60 cents*	Value at receiving door	Cost of picking and hauling at 14 cents	Value on trees	Average returns per acre†
Total	Other states	California						
1	2	3	4	5	6	7	8	9
<i>thousand boxes</i>	<i>thousand boxes</i>	<i>thousand boxes</i>	<i>dollars per box</i>	<i>dollars per box</i>	<i>thousand dollars</i>	<i>thousand dollars</i>	<i>thousand dollars</i>	<i>dollars</i>
28,080	15,509	12,571	1.65	1.05	13,200	1,760	11,440	121
27,000	14,912	12,088	1.80	1.20	14,506	1,760	12,746	135
26,000	14,360	11,640	1.96	1.36	15,830	1,760	14,070	149
25,000	13,808	11,192	2.13	1.53	17,124	1,760	15,364	163
24,000	13,255	10,745	2.32	1.72	18,481	1,760	16,721	177

* The average cost of packing and selling in 1933-34 amounted to \$0.60 a packed box.

† The bearing acreage of Navel oranges in California in 1934 amounted to 94,300 acres.

United States shipments amounted to 28,080,000 boxes. The average California f.o.b. price was \$1.65 a box. The middle curve shows that if United States shipment in 1933-34 had amounted to 26,000,000 boxes, the average price would have been around \$1.95 a box, while if United States shipments had amounted to 24,000,000 boxes, the average price would have been around \$2.30 a box.

Table 8 is designed to show the effect of limiting United States shipments of winter oranges upon prices and returns to California growers under the demand conditions which prevailed in 1933-34. Here it is assumed that the same percentage reduction in shipments would be made in all states. Column 4 shows the probable prices of California winter oranges that would have prevailed in 1933-34 if shipments had been limited to those given in columns 1, 2, and 3. With the cost of packing and selling at 60 cents a packed box, column 5 shows the price per packed box at the receiving door of the packing-house. Column 6

¹⁷ Only the lower part of the curve in figure 13 is shown in figure 14. The three curves in figure 14 were drawn so as to be parallel on an arithmetic scale.

shows the value of the total shipments at the receiving door. With an average cost of picking and hauling at 14 cents per packed box, column 7 shows the total cost of picking and hauling at 12,571,000 boxes. Since the entire crop must be picked and hauled, if total shipments are curtailed, the total cost of picking and hauling remains the same, irrespective of the volume sent to the products plant or dumped. Column 8 shows the total returns to the growers for fruit on the trees, and column 9 shows the average returns per acre on the trees. The average return per

TABLE 9

WINTER ORANGES, 1933-34: ESTIMATED EFFECT OF LIMITING CALIFORNIA SHIPMENTS UPON CALIFORNIA F.O.B. PRICES, TOTAL VALUE OF THE CROP, AND AVERAGE RETURNS PER ACRE, WITH NO REDUCTIONS IN OTHER STATES

Shipments			California f.o.b. price	F.o.b. price minus 60 cents*	Value at receiving door	Cost of picking and hauling at 14 cents	Value on trees	Average returns per acre†
Total	Other states	California						
1	2	3	4	5	6	7	8	9
<i>thousand boxes</i>	<i>thousand boxes</i>	<i>thousand boxes</i>	<i>dollars per box</i>	<i>dollars per box</i>	<i>thousand dollars</i>	<i>thousand dollars</i>	<i>thousand dollars</i>	<i>dollars</i>
28,080	15,509	12,571	1.65	1.05	13,200	1,760	11,440	121
27,000	15,509	11,491	1.80	1.20	13,789	1,760	12,029	128
26,000	15,509	10,491	1.96	1.36	14,268	1,760	12,508	133
25,000	15,509	9,491	2.13	1.53	14,521	1,760	12,761	135
24,000	15,509	8,491	2.32	1.72	14,605	1,760	12,845	136

* The average cost of packing and selling in 1933-34 amounted to \$0.60 a packed box.

† The bearing acreage of Navel oranges in California in 1934 amounted to 94,300 acres.

acre for California winter oranges in 1933-34 was \$121. If United States shipments had been reduced from 28,080,000 boxes to 26,000,000 boxes, and all states had participated proportionately in the reduction, the average returns per acre to California growers would probably have been around \$150.

Table 9 is designed to show the effect upon price and returns to California growers from a reduction in the shipments of California winter oranges alone. This table has been worked out in the same way as table 8; the difference here is that the entire reduction is assumed to have taken place in California shipments. It will be noted that while some increase in returns to California growers of winter oranges is indicated from a reduction of their own shipments, it is relatively small. For example, whereas table 8 shows that a reduction in total United States shipments from 28,080,000 boxes to 26,000,000 boxes, if made proportionately by all states, would result in an increase in returns per acre to California growers of nearly \$30, table 9 shows that if the same total reduction in shipments is brought about by a reduction in California shipments alone,

the resulting increase in returns per acre to California growers would be only \$12. Attention should also be called to the fact that if there is no control of orange shipments from states other than California and there is a limitation of shipments from California, shipments from other states during the six months November through April might be increased. If this should occur, the gain to California growers from limiting their own shipments would be correspondingly less.

As in the case of summer oranges (p. 15), limitation of shipments of winter oranges is most effective in increasing returns to growers in years of low demand conditions and large crops, while in years of high demand conditions and small crops, limitation of California shipments of winter oranges alone may result in reduced rather than increased returns to growers.

From the foregoing analysis it is concluded that limitation of California shipments of winter oranges alone would result in increased returns to California growers in years when there is a large United States crop of winter oranges and a relatively large percentage of that crop is produced in California, and when the buying power of consumers is low. In this connection attention is called to the lower curve in figure 14, which represents the supply-price schedule for winter oranges adjusted to the 1932-33 situation. If the United States winter-orange crop in that season had been as large as in 1934-35, when total shipments amounted to 30,663,000 boxes, it is doubtful if the entire amount could all have been sold at prices equal to the costs of marketing. In fact, this curve indicates that shipments in excess of 29,000,000 boxes would have meant an f.o.b. price in California that season of less than 70 cents a box.

Effect Upon Returns to Growers of Regulating the Flow of California Winter-Orange Shipments During the Season.—The qualitative analysis presented in connection with the discussion of summer oranges, which indicated that regulation of the flow of shipments during the season to prevent temporary market gluts results in increased returns to growers, is applicable to California winter oranges, and, therefore, will not be repeated (p. 17). To be most effective, however, regulation of the flow of winter-orange shipments from this state should be accompanied by similar regulation of orange shipments from other states. But even in the absence of effective regulation of shipments from other states, regulation of the flow of shipments from California alone would probably result in larger returns to California growers than would otherwise prevail.

The analysis of the California winter-orange prices indicates that the adjusted seasonal average f.o.b. prices of California winter oranges were lower in seasons of unregulated shipments than in seasons of regulated shipments. Figure 13 shows that the adjusted prices are considerably be-

low the supply-price curve in 1930-31, 1931-32, and 1932-33, slightly below it in 1933-34, but above it in 1934-35.¹⁸ In the other years, with the exceptions of 1924-25 and 1925-26, the adjusted prices virtually coincided with the supply-price curve.¹⁹ As in the case of California summer oranges, the flow of shipments of California winter oranges was fairly well regulated to the market demand prior to 1930-31. With the great decrease in the buying power of consumers during the depression, and with continued heavy crops, market gluts became more frequent. At times prices in eastern markets fell so low that growers received no returns for the fruit sold at those prices. Lack of effective regulation of shipments, which was apparent particularly in 1931-32 and 1932-33, was partly responsible for the relative low adjusted prices in those years. Since January, 1934, shipments of California oranges have been more carefully regulated to market demands under the marketing agreement and license. Thus, shipments of winter oranges from California were under a coördinated program of regulation for over one-half of the 1933-34 season and for all of the 1934-35 season. The adjusted price of California winter oranges was less than one-half as far below the supply-price curve in 1933-34 as it was in the previous three seasons, while in 1934-35 the adjusted price was above the supply-price curve.

CONCLUSIONS

The seasonal average f.o.b. prices of California oranges are affected by the volume of oranges shipped, by the quality of the oranges, by the trend of demand for oranges, by the volume of competing products on the market, by the buying power of consumers, and by the confidence of the trade in the stability of orange prices.

The volume of oranges shipped and the confidence of the trade in the stability of orange prices can be influenced by regulation of shipments.

In seasons of large crops, relative to the buying power of consumers, prices and returns to California growers of summer oranges can be materially increased through limitation of the volume of shipments.

The extent to which prices and returns to California growers of winter oranges can be increased, through limitation of California shipments alone, is much less than in the case of summer oranges. But even here, in years when very low demand conditions coincide with large national crops of oranges and where an unusually large proportion of the crop is produced in California, limitation of California shipments

¹⁸ The f.o.b. prices in figure 13 have been adjusted by eliminating the trend of demand and the variations in f.o.b. prices associated with the index of urban consumers' incomes.

¹⁹ No satisfactory explanation has been found as to why adjusted prices were relatively high in 1924-25 and relatively low in 1925-26.

alone will result in some increase in returns to California growers over what they would otherwise be.

The market for both summer and winter oranges produced in California can be stabilized through the regulation of the flow of shipments from this state which prevents temporary gluts and scarcities. Such regulation will enable a larger quantity of oranges to be moved into consumption at a higher level of prices to growers.

Limitation of shipments for the season as a whole is a device to be used intermittently; regulation of the flow of shipments during the season, without actual limitation of the total supply, is a device to be used continuously. Limitation of the total supply placed on the market will prove beneficial in years of acute emergency situations; that is, when prices and returns to growers would otherwise be at distressingly low levels. Regulation of the flow of shipments during the season will prove beneficial under nearly all conditions, and its use in years of surpluses, by facilitating the movement of oranges through trade channels into consumption will reduce the size of that surplus.

